

Serial No. - 10/034,852
Art Unit - 1775

REMARKS

Claims 19, 21-26, and 47 are pending in the present application. By the present amendment, claims 19, 21-26, and 47 have been amended and claims 3-18, 20 and 46 have been canceled to advance prosecution of the present application. Of the pending claims, 19 and 47 are independent. Applicant reserves the right to pursue prosecution of the canceled claims in a continuation of the present application.

Each of the remaining independent claims include recitations present in the set of claims submitted prior to receipt of the above-noted final office action. Accordingly, applicants respectfully submit that the present amendment does not introduce new issues for consideration. Applicants respectfully submit that the present amendments actually reduce the issues before the Examiner for consideration because none of the independent claims recite the "overlayer" in terms of a "metal oxide" overlayer. Rather, each independent claim either identifies the overlayer as an "yttrium oxide" overlayer or a "rare earth oxide overlayer." Further, each of the independent claims recites that the overlayer "exhibits positive free energies of reaction with titanium." This change to the claim language represents a more definite recitation of the "chemically inert" language present in the original claims because it is a more direct reference to the definition of "chemically inert" presented in the specification:

For the purposes of describing and defining the present invention, it is noted that a material may be considered substantially chemically inert with respect to titanium (Ti) if it exhibits positive free energies of reaction with Ti and, as such, defines a positive heat of formation (see page 4, lines 17-20)."

Regarding the recited overlayers, applicants note that none of the cited references teach or suggest an yttrium oxide overlayer or a rare earth oxide overlayer that exhibits positive free energies of reaction with titanium. Specifically, the published UK patent application (GB 2048960) merely suggests an aluminum oxide overlayer. Further, Sarin et al. (US 4,702,970),

Serial No. - 10/034,852
Art Unit - 1775

merely teaches an underlayer that contains yttrium oxides and some other rare earth oxides. None of the cited references suggest an yttrium oxide "overlayer."

A reasonable reading of the present application, particularly as would be understood by those of ordinary skill in the art, leaves one with the clear understanding that the "overlayer" recited in the claims and identified in the detailed description is the outermost layer of the coated machine tool - the layer intended to come into direct contact with the titanium to be machined. For example, the present specification points out that

The overlayer 35 may comprise, for example, an inert metal oxide such as Y_2O_3 , an oxide of yttrium (Y). Y_2O_3 is particularly well-suited for titanium machining because it is not chemically reactive with titanium or titanium alloys and helps minimize high cutting temperatures typically associated with titanium machining (see page 4, lines 14-17).

and

The overlayer 35 is formed over the underlayer 25 and is substantially chemically inert with respect to titanium. The use of a chemically inert layer is particularly advantageous because it is not susceptible to the diffusion, dissolution, bonding or welding that would otherwise be associated with titanium machining by conventional means (see page 4, lines 10-13).

Further, the figures clearly illustrate an underlayer 25, and interlayer 30, and an overlayer 35 - with the overlayer 35 clearly illustrated as the outermost or exterior layer of the coated machine tool. Applicants respectfully submit that none of the cited references teach or suggest an overlayer having the particulars recited in the pending claims and, as such, the present application is in condition for allowance.

Serial No. - 10/034,852

Art Unit - 1775

In an effort to clarify issues preserved for potential appeal, applicant also notes that no specific teachings have been noted in support of the rejection of the specific overlayer compositions of claims 21, 22, 25, 26 or the specific grading recited in claim 47.

The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
DINSMORE & SHOHL L.L.P.

By 

James E. Beyer

Registration No. 39,564

One Dayton Centre
One South Main Street, Suite 500
Dayton, Ohio 45402-2023
Telephone: (937) 223-2050
Facsimile: (937) 223-0724